

CLAIMS

We claim:

1. A device comprising a meltable material disposed within a substrate and associated with a heating element.
2. The device of Claim 1, wherein said substrate further comprises a microdroplet channel disposed within said substrate, said meltable material disposed within said microdroplet channel.
3. The device of Claim 1, wherein said substrate is selected from the group consisting of glass and silicon.
4. The device of Claim 1, wherein said meltable material comprises solder.
5. The device of Claim 1, wherein said solder comprises a eutectic alloy of tin and lead.
6. The device of Claim 5, wherein said alloy comprises 60:40 Sn:Pb.
7. The device of Claim 4, wherein said solder comprises 40:60 Sn:Pb.
8. The device of Claim 1, wherein said meltable material is selected from a group consisting of plastic, polymer and wax.
9. The device of Claim 1, further comprising a diaphragm positioned such that it is capable of touching said meltable material when extended.

10. A method comprising:
- a) providing a device comprising a meltable material disposed within a substrate, said meltable material associated with a heating element; and
 - b) heating said meltable material with said heating element such that said meltable material at least partially liquifies and such that said substrate is not damaged.
11. The method of Claim 10, further comprising c) allowing said meltable material to cool.
12. The method of Claim 10, wherein said substrate further comprises a microdroplet channel disposed in said substrate, said meltable material disposed within said microdroplet channel.
13. The method of Claim 10, wherein said substrate is selected from the group consisting of silicon and glass.
14. The method of Claim 10, wherein said meltable material comprises solder.
15. The method of Claim 14, wherein said solder comprises a eutectic alloy of tin and lead.
16. The method of Claim 15, wherein said alloy comprises 40:60 Sn:Pb.
17. The method of Claim 10, wherein said meltable material is selected from a group consisting of plastic, polymer and wax.

18. A method for restricting fluid flow in a channel, comprising:
- a) providing:
 - i) a main channel connected to a side channel and disposed within a substrate, and
 - ii) meltable material disposed within said side channel and associated with a heating element,
 - b) applying heat generated by said heating element under condition such that an anisotropic expansion of said meltable material induces movement of said meltable material from said side channel into said main channel.
19. The method of Claim 18, further comprising c) allowing said meltable material to cool.
20. The method of Claim 18, wherein said main channel and said side channel are microdroplet channels.
21. The method of Claim 18, wherein said substrate is selected from the group consisting of silicon and glass.

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